



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,787	10/03/2003	Anani Ananiev	PTV100203	3972
7590	06/30/2005		EXAMINER	
Evgeniy Petov 55 Claire Court West Babylon, NY 11704			MARC, MCDIEUNEL	
			ART UNIT	PAPER NUMBER
			3661	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/678,787

Applicant(s)

ANANIEV ET AL.

Examiner

McDieunel Marc

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 is/are allowed.
- 6) ☐ Claim(s) 2-3 and 5-6 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/3/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. Claims 1-6 are presented for examination.

Specification

2. The abstract of the disclosure is objected to because the title on top of the abstract should be deleted. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 3661

5. Claims 2-3 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hogg et al.** (U.S. Pat. No. **6725128 B2**) in view of **Weitzner et al.** (U.S. PG Pub. No. **20040176751**).

As per claim 2, Hogg et al. teaches a self-reconfigurable robot redundant modular robot comprising a plurality of modules each of which being with the same internal construction and being articulated at one end thereof to the next adjacent said module by an inter-link shaft such that the entire said robot forms a chain of multiple said modules that are driven by a shaft (see figs. 1-3 and abstract), which penetrates all said modules, the distal side of which being extended up to the desired number of said modules in said robot (see figs. 1-3), the proximal end of the body of which being fixed to the proximal module of said chain of multiple modules, and an end-effector connected to the distal module of said robot (see figs. 1-6). Hogg et al. does not specifically teach a flexible shaft, said shaft being connected to the output shaft of a driving irreversible motor.

However, Weitzner et al. teaches a medical instrument which belong to robotical environment includes a flexible shaft, said shaft being connected to the output shaft of a driving irreversible motor (see sections [0009 and 0011] and figs. 2, 3, 3A, 3B and 5).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the robot type of Hogg et al. with the robot type of Weitzner et al., because this modification would have enhanced Hogg' s et al. robot so that a flexible shaft could be introduce into Hogg' s et al. robot, thereby improving the efficiency and the reliability of modular robots.

As per claims 3, 5 and 6, Weitzner et al., in view of Hogg et al. wherein same construction can have double functioning, meaning when said proximal module of said

Art Unit: 3661

chain of multiple modules is fixed on a base installed to appropriate working space the said robot behaves as a manipulator arm or "elephant trunk" (see fig. 1), and when said proximal module of said chain of multiple modules is unfixed the said robot behaves as a "snake" or "earthworm" (see 3, 3A and 3B); when a manipulator arm or "elephant trunk" is constructed one axial rotating degree of freedom is introduced by a second motor, the body of which is fastened to a cylindrical body articulating around the body of the said proximal module such that a pair of transferring wheels the first of which being fixed to the output shaft of the said second motor and the second of said transferring wheels is fixed around the body of said proximal module (see fig. 5); a second degree of freedom swiveling around an axis that is perpendicular to the axis of said axial rotating degree of freedom by means of a third motor (see figs. 3, 3A, 3B and 5), the body of which is fastened to a base and the output shaft of said third motor is fixed to said cylindrical body, which articulates in appropriate bearing in the said base that is can be installed at appropriate working space or on a mobile platform for performing mobile robot manipulations (see fig. 1).

Allowable Subject Matter

6. Claim 1 is allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fail to teach or fairly suggest a method further using a plurality of pairs of electromagnetic clutches and respective kits of transmission and driving wheels to distribute selectively the torque/rotation of the said single irreversible motor to anyone of the said robot modules as a desired destination, such that when a said electromagnetic clutch is powered-on the rotation in one direction of said flexible shaft is translated to the shaft of the destination said mechanism through a respective

Art Unit: 3661

said transmission wheel or alternative said clutch and respective said transmission wheel are activated if the opposite direction of rotation is desired in combination with the other elements of the claimed invention.

8. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: .

The prior art of record fail to teach or fairly suggest a pair of electromagnetic clutches, the body of which is fixed to the body of said module and the shaft of each said electromagnetic clutch is fastened to one of said primary transferring wheels, a pair of secondary transferring wheels each of which is fixed to the moving part of the respective said electromagnetic clutch, such that when said electromagnetic clutch is powered-on, the said secondary transferring wheel receives the rotation from said primary transferring wheel, a secondary driving wheel, which is fixed to the said inter-link shaft and is also coupled to both said secondary transferring wheels such that receives the rotation from one of said secondary transferring wheels and rotates through said inter-link shaft the said next adjacent module in combination with the other features of the claimed invention.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to McDieunel Marc whose telephone number is (571) 272-6964. The examiner can normally be reached on 6:30-5:00 Mon-Thu.

Art Unit: 3661

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


McDeunel Marc

Friday, June 17, 2005

MM/